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WORLD FOOD PROGRAMME

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NUTRITIONAL & MORTALITY SURVEY

HERAT CITY - AFGHANISTAN

July 2000

By Charlotte DUFOUR, Nutritionist

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NUTRITIONAL SURVEY

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SUMMARY

Date:	9th to 17th July 2000
Target group:	Children 6-59 months (65 to 110cm) Mothers 15-45 years of age
Methodology:	Random two stage cluster survey
Sample size:	926 children, 30 clusters 724 mothers, 30 clusters

Results

Children 6-59 months:

ACUTE MALNUTRITION	SEVERE	GLOBAL
Z-score[1] *95% CI*	0.5% *(0.1% - 1.9%)*	7.3% *(5.2% - 10.3%)*
% of the median *95% CI*	0.5% *(0.1% - 1.9%)*	5.0% *(3.2% - 7.5%)*

CHRONIC MALNUTRITION	HAZ < -3SD *Severe stunting*	HAZ < -2SD *stunting*
Z-score *95% confidence interval*	19.3% *(16.9-22.1%)*	46.7% *(42.1-51.3%)*

Mothers 15-45 years:

Grade	CED III	CED II	CED I	Normal/ Obesity
%	4.8	5.2	14.2	75.8

Comparisons with surveys in Kabul and Kandahar

The global acute malnutrition rate (7.3%) is surprisingly high, given Herat City is considered one of the wealthiest, cleanest, and most food secure cities in Afghanistan. The rate is indeed higher than those found in Kabul, in February 2000 and Kandahar in May 2000[2]. This difference could be explained by two reasons.

The first is that the Herat survey was conducted during the summer months, a period when the prevalence of diarrhoea greatly increases in Afghanistan, and with it the prevalence of malnutrition. The high rate of acute malnutrition would thereby be essentially a seasonal phenomenon. The other reason is that there seem to be wide discrepancies in the living standards of different social groups in Herat. While in some areas families are very wealthy, others have similar living conditions than those of the poor neighbourhoods in Kabul and Kandahar. Most of the malnutrition cases were concentrated in these areas.

The rate of chronic malnutrition was lower than in Kabul and Kandahar, but still excessively high. Chronic malnutrition makes children weaker, and much more vulnerable to infections, acute malnutrition and death, and its prevention should be a priority in primary health care programmes. Preventing chronic malnutrition would most likely reduce children's vulnerability to acute malnutrition. This should be done by improving

[1] See chapter on methodology
[2] The results of Kandahar are based on an assessment on 403 children.

primary health care, hygiene practices, diet quality (increase the consumption of micronutrients and good quality protein), and improving the water and sanitation conditions.

The use of maternal and child health care facilities tended to be better in Herat than the other two cities, as indicated by the higher vaccination coverage for measles and tetanus and greater number of peri-natal consultations. The city was also cleaner (good waste collection system, recently rehabilitated water evacuation networks), and people seemed to have better hygiene practices (cleaner homes). This reflects partly the higher level of education of the population, the availability of several MCH clinics supported by NGOs, and the quality of previous water and sanitation programmes.

In terms of child feeding practices, there is a great need for health education, especially with regards to breastfeeding. Many mothers introduced weaning foods too early in the diet and did not give sufficiently balanced foods. Also, some mothers reported not breastfeeding their child because of milk deficiency. This puts their child at a great risk of disease and malnutrition, and can be easily avoided with proper knowledge.

Although the situation seems better in Herat than in Kabul and Kandahar in many aspects, the chronic and acute malnutrition rates are very high and the population still has many needs. Improvements need to be made in health and hygiene practices, feeding habits, water and sanitation, use and availability of primary health care, vaccination coverage. The food security of poor families, living in vulnerable areas, should also be assessed in greater detail and food security programmes targeted to these groups.

Major recommendations

- To improve existing supplementary feeding programmes, through regular screenings in vulnerable areas, expanding the programmes' present capacity, and, if possible, introducing a home visiting programme to improve the detection and follow-up of malnutrition cases.

- To implement a nutrition surveillance and referral system, such as through MCH clinics by the systematic screening (weight and height, or MUAC) of all children attending the clinics.

- To improve families' diet and child feeding practices through the promotion of kitchen gardening, and health education on healthy eating and appropriate infant feeding (especially proper breastfeeding), with food demonstrations.

- To provide support for mothers claiming to have problems breastfeeding, through special health education sessions, or support groups, and by training dahias on how to assist and teach mothers proper breastfeeding practices.

- To improve peri-natal care, such as through the training of traditional birth attendants (dahias), and expansion of maternal and child health services.

- To further improve the vaccination coverage, through vaccination campaigns and improvements in the EPI system.

- To continue and increase efforts in the prevention and treatment of diarrhoea.

- To do food security assessments to identify the vulnerable areas of Herat, determine their needs, and implement food security programmes such as cash or food-for-work, or income generation schemes in these areas.

- To continue to improve the water and sanitation infrastructure, especially in vulnerable areas. To associate such projects with health and hygiene education.

INTRODUCTION

Action contre la Faim conducted an anthropometric survey during the month of July 2000, to evaluate the nutritional status of children between 6 months and 5 years and their mothers, in Herat City. This survey is part of a series of nutritional surveys conducted in collaboration with WFP, in 6 main cities of Afghanistan: Kabul, Herat, Mazar, Faizabad, Kandahar, and Jalalabad. The aim of this programme is to provide agencies with baseline nutritional data on the main urban areas of Afghanistan, to complete food security assessments, and evaluate the need for nutrition-related programmes in these cities. The surveys are not intended to provide information on the rural areas surrounding these cities, and should not be considered representative of regions other than the cities where they are conducted.

1. Political situation

Historically, Herat has been renowned as a centre of learning, religion and fine arts throughout the centuries. It is known as the most beautiful city of Afghanistan, with a rich architectural heritage, but it was greatly destroyed in 1979, when the Russians heavily shelled the city in response to an uprising of the Heratis, and to the coup led by the Mujaheddin commander Ismail Khan. 20,000 civilians were killed and tens of thousands of refugees fled to Iran.

After the Russian retreat, Ismail Khan regained control of the area, but he had to surrender to Taliban forces, in September 1995, and fled to Iran. Unlike in Kandahar, the Pashtun Taliban were not welcomed by the sophisticated, Persian-speaking Heratis, who regarded them as gross and uneducated. The Taliban arrested many Heratis, closed down schools and strongly enforced the Sharia law. They handed all the city's administrations to Durrani Pashtuns, many of which could not even speak Persian.

Five years after the Taleban victory, the tensions seem to have relaxed. There has been no fighting since 1995, except for small incidents between isolated opposition groups and the Taliban, in surrounding provinces such as Ghor and Pashtun Zardak provinces. There is also some banditry and ambushes along the main roads to Kandahar and to Iran.

Since the end of the Russian occupation, many Afghans have been returning from Iran, to their hometowns, via Herat city. Many returnees stay in Herat, however, living in refugee camps just outside the city. The flow of returnees had been slowed when the Talebs took control in 1995, but a new programme of repatriation has started in April 2000, with the assistance of the UNHCR and IOM. Many Afghans are still finding their way to Iran, however, especially in search of job opportunities.

2. Food security background

A WFP VAM study conducted in 1999[3] concluded that income levels tend to be higher and food prices lower in Herat city than in other urban centres of Afghanistan. It claimed that, overall, all households can meet their minimum food needs. The most vulnerable households, termed 'very poor households without male workers' by WFP, nevertheless have difficulty meeting their minimum income requirements (which include essential non-food items), and need to resort to begging.

Herat benefits from its position on the trade routes between Iran, Turkmenistan, and Kandahar and Pakistan. It receives oil, gas and cereals from Turkmenistan, and textiles, cosmetics and pharmaceuticals, building materials, as well as about 30% of its wheat supply from Iran. Many Herati families also have one male working in Iran, who sends remittances. The city also benefits from the proximity of the rich rainfed cereal producing regions of Afghanistan (Badghis, Faryab, and Jawzjian), and the fertility of the Herat valley.

[3] See WFP Vulnerability Assessment and Monitoring unit's Baseline report on Herat City, April 2000.

There are IDPs (internally displaced persons) in the city, which tend to belong to the poorer groups, but there were no differences in food insecurity and poverty levels between IDPs and residents. However, a new wave of IDPs (a few hundred families) has started to arrive during the month of July, from drought stricken areas (after the VAM assessment was made). These families are living in refugee camps and it is likely that they are more food insecure than even poor Herat residents.

2.1 Sources of income

Richer households receive income from land ownership, commerce and productive activities, and often have a man working in Iran or Europe. The poorer households tend to rely on casual labour, and households without male workers have recourse to women's work (handicraft, embroidery, laundry, bread baking, etc.) and child's work (helping in tea stalls, mechanical work, collection of fire wood, plastic or rubbish for sale). Most poor households also sell assets, although they have very little to sell. Begging is an important source of food (24% of the family's food) and income for the poorest families.

2.2 Food assistance

There is no major food assistance, such as the WFP bakeries, ICRC and Care rations in Kabul city, distributed in Herat City.

WFP provides food for the following programmes:

- supplementary feeding programme for malnourished children in 3 Maternal and Child Health (MCH) clinics run by MDM, and 1 run by DAC.
- one ration of 50kg of wheat per returnee from Iran (one-off distribution)
- food ration for TB patients in TB wards
- food for in-patients in the city hospital
- food rations for trainers and students in the female nursing school (as an incentive)
- food-for-work programmes run by UNCHS (for water and sanitation works), and for the rehabilitation of the maternity ward in the hospital (completed early 2000).

2.3 Food prices

Food prices tend to be lower in Herat than in the 5 other main cities of Afghanistan. However, the average daily wage for a casual labourer is lower than in the other cities, such that the number of kg of wheat that can be bought with one day of labour is lower than all other cities, except in Mazar. Table 1 presents the price of wheat, bread, the daily wage for casual labour, and the ratio of kg of wheat/ labour day (in July 1999 and July 2000) in Kabul, Kandahar, Jalalabad, Herat, Mazar and Faizabad, for the week of the 11th to 17th of July (provided by WFP).

Table 1: Key food and labour indicators for 11th to 17th July 2000, in 6 main cities of Afghanistan

	Wheat		**Bread**		**Casual Labour/day**		**Kg wheat/ labour day**		**Afs/US£**
	AFS	*US$*	*AFS*	*US$*	*AFS*	*US$*	07/99	07/00	
Herat	**11,225**	**0.18**	**16,667**	**0.26**	**50,000**	**0.79**	**10.7**	**4.5**	**63,000**
Kabul	14,571	0.23	17,750	0.28	70,000	1.11	5.1	4.8	62,800
Kandahar	13,600	0.22	21,660	0.35	70,000	1.12	7.7	5.1	62,750
Jalalabad	13,347	0.21	20,000	0.32	73,333	1.16	6.0	5.5	63,200
Mazar	32,000	0.25	50,000	0.40	100,000	0.79	6.6	3.1	126,500
Faizabad	31,428	0.26	50,000	0.41	150,000	1.24	6.6	4.8	121,000

It is worth noting that the rate of kg of wheat per labour day was much higher in Herat than all other cities, in July 1999, but that is has plummeted since then to become the lowest (except for Mazar). It is likely that this fall is due to a decrease in the price of labour. The recent inflow of returnees and IDPs may have increased the supply of labour, compared to the demand, thus making the daily wages fall.

Action contre la Faim collected the prices for main food and non-food items in Herat City, during the nutritional survey. These are presented in Annexe 1.

2.4 Economic inequalities between income groups

Herat is known to be one of the wealthiest cities in Afghanistan, and indeed, during the surveys, the teams saw impressive, newly build houses, well furnished with dozens of carpets and western-style kitchens and bathrooms. Several families also had cars, factors which suggest that the living standards in Herat can be quite high. However, many people live in much more modest conditions. There seem to be very wide discrepancies between the living standards of the richest and poorest in Herat city.

3. Water and sanitation

The water and sanitation situation in Herat city is relatively good, compared to Kabul and Kandahar. UNCHS (HABITAT) ran a big water supply and sanitation programme between 1995 and 1999, during which more than 200 hand-pumps were installed, and 2 main city water networks (5.6km of main drainage) were redone. It claims these networks are well maintained by the municipality and still intact. It also implemented a city-wide system for solid waste collection (the karachi system), which is still running, without HABITAT input, under the supervision of the municipality.

Further water and sanitation projects are planned to be implemented through HABITAT's community fora (CF)[4]: 1 programme involves water and sanitation projects designed by the CF themselves, adapted to the needs of the district. And another involves home visiting of health and sanitation mobilisers who sensitise families on waste collection, and work on expanding the existing karachi system. HABITAT is also starting the rehabilitation of Khandaks (water collection pits), which are presently extremely dirty and a source of disease.

It seems that local practices also play a role in keeping the city clean. Unlike in Kandahar, and even Kabul, the surveyors found most houses, even in poor areas, to be kept clean, with well-swept floors. The streets were mostly free of waste, unlike Kandahar, where latrine waste was leaking out of traps, and flowing in the streets.

4. Medical care

The main health infrastructures in Herat city are the main hospital, which serves all the region, and 11 Maternal and Child Health clinics. Of the 11 clinics, several are supported by international agencies, including MDM (3 clinics), DAC (2 clinics), and IAM. MoPH runs 4 MCH clinics. MDM and DAC clinics are situated near or in the refugee camps, to service in priority the refugees, but many local residents also attend them. MDM has a home visiting programme with a health educator and traditional birth attendants (TBA) in the refugee camps, but not in the Herat resident households.

It is difficult to evaluate the quality of care in the clinics, but it is usually very poor unless the clinic is supported by an INGO since government clinics tend to be understaffed and under-equipped.
The maternity ward of the hospital was rehabilitated and newly equipped with the support of UNICEF and WFP earlier this year.

[4]There are presently 6 CF for men, and 1 for women. It is planned to open more CF in the next year, such that each district has one CF for men and one for women.

UNICEF and WHO are responsible for the EPI (Extensive programme of Immunisation) programme and NIDs (National Immunisation Days) for polio, as elsewhere in the country. A Control of Diarrhoeal Disease taskforce, grouping NGOs, MoPH and UN agencies. It has concentrated on education campaigns on sanitation and hygiene and the promotion of ORS, and the treatment of cases in ORT centres. A school for female nurses has reopened in 1999, for the training of sanitarians and midwives. UNICEF and WHO also conduct several trainings for midwives, nurses and traditional birth attendants

5. Nutritional Programme

MDM has supplementary feeding programmes in its 3 MCH clinics. There are 1 or 2 malnutrition consultations each week in each clinic, during which children are screened for acute malnutrition, and moderately malnourished children are treated. Children are admitted if their weight-for-height is between 70 and 80% of the median; their weight is checked, and they are given a food ration, every 2 weeks until they reach 85% weight-for-height for 2 consecutive weeks. At the time of the survey, more than 400 children were being followed in the clinics.

MSF was in the process of reopening a therapeutic feeding centre in the hospital, for the treatment of severe malnutrition, during the survey. It was opened at the beginning of August 2000. Before its opening, severely malnourished children were followed in the MDM clinics.

6. Note on returnees, IDPs, the drought, and season

This survey was intended to provide baseline nutritional information on the population of Herat city. Only Herati residents were included, thereby excluding the population of refugee camps. These camps are essentially transit camps for people returning to other areas of Afghanistan, although many stay on in the camp.

Several families were also arriving in Herat, to flee the drought in Ghor and Badghis districts. At the beginning of the survey, 60 families had arrived, and were camping in the city. The number of families was increasing rapidly (about 50-100 arrivals per week), throughout July. These families were also excluded from the survey.

Médecins du Monde conducted a nutritional screening in the Minaret I and II camps (on the 18th of July)and the CTC refugee camp (8th of August). In the Minaret camps, there were and estimated 83 to 98 children between 6 and 59 months. 73 were measured, and of these, 1 (1.37%) was severely malnourished, and 8 (10.96%) moderately malnourished. In the CTC camp, there were an estimated 61 to 72 children between 6 and 59 months. 48 children were measured, and of these there were no severely malnourished children and 12.5% were moderately malnourished (see annexe 2 for detailed results). The rates of malnutrition are higher than those found in the ACF survey (the sample size in the MDM screening was small but covered most of the target population).

It is unlikely that the drought may have had an impact on the nutritional situation among Herat City residents, when the survey was conducted. At the time of the survey, the water level in the main deep wells in the city had dropped by about 1 m, but the situation was not considered serious yet. Water was still widely available, and furthermore, there is a delay between the onset of water shortages and their impact on the nutritional status of children, such that any nutritional consequences of the drought would be seen later. It must be emphasised that this survey is in no way representative of the situation in the rural areas, which are much more affected by the drought, and where the nutritional situation is likely to be worse than in urban areas.

The survey was carried out in the summer months, when there is traditionally an increase in diarrhoeal diseases in many areas of Afghanistan. This affects the nutritional status of children, since diarrhoea is an essential cause of malnutrition, such that there usually is a seasonal peak of acute malnutrition between July and September.

OBJECTIVES

- To assess the nutritional status of children under 5 years, and of their mothers in Kabul city
- To assess the crude mortality rate in the total population, and among children under 5 years
- To assess the measles vaccination coverage in children 9 to 59 months of age, and the tetanus vaccination coverage among mothers 15-45 years.
- To assess the use of pre- and post-natal care among mothers
- To assess the feeding practices of children 6-12 months

METHODOLOGY

1. Type of survey and sample size

A two stage cluster survey was conducted. A sample size of 900 children (30 clusters x 30 children) was chosen, since this provides a reliable estimate of the malnutrition rate, regardless of the actual malnutrition rate (precision of 2 to 3% depending on the prevalence of malnutrition, with a risk of error of 5%). The survey teams were asked to include 31 children in each cluster so as to allow for a margin of error. A total of 926 children were included in the analysis of anthropometric measurements.

2. Selection of the clusters

The population data used had been compiled by UNCHS/Habitat, in October 1996. It was considered the most reliable data set available. Herat City is subdivided in 8 districts, which are divided in 113 Gozars. For each gozar, the number of children under 6 years had been collected. This data was used as an approximation of the number of children under 5[5]. The 30 clusters were then randomly selected from the cumulative population list of children under 6 years. (see annexe 3 for the list of selected Gozars).

3. Household and family selection

The Wakil-e-Gozar helped the surveying teams identify the limits of the Gozar and led them to its centre. The direction to start with was randomly chosen by spinning a pen at the centre of the Gozar. The first house to be surveyed was selected at random by numbering each house from the centre up to the limit of the Gozar, on the right hand side of the street. After the selection of the first house, the next house was chosen by leaving the first by the main entrance and taking the next one on the right. If the limit of the Gozar was reached before 31 children were surveyed in the cluster, the team returned to the centre and repeated this process.

Whenever a house was empty, or when there were no children between 6 and 59 months, the next one on the right was be visited. If more than one family lived in the same house or compound, each mother with children aged 6 to 59 months was assigned a number and only one family was selected, by drawing a number out of a bag. A family was defined as a group of people living in the same house and sharing the same cooking pot. A child was considered to belong to the family if it had been living with it for more than 2 months.

4. Selection of the children

4.1 <u>Children from 6 to 59 months</u>

Among all children 6-59 months in the family, only one child was chosen randomly, by drawing numbers from a bag. If a selected child was absent, an appointment was arranged by the surveying team by filling in an "absentee form", and the team returned to the house.

4.2 <u>Women in the age range: 15 - 45 years old</u>

All the mothers of selected children, who were between 15 and 45 years old, were surveyed. This group corresponds to mother in the childbearing age, and was used as a standard for all surveys conducted by ACF in Afghanistan, in order to have comparable data across surveys. Pregnant or absent mothers were excluded.

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[5]the alternative was to take 17% of the total population in each gozar to obtain an estimate of the under 5 population, but such estimates would have been even less precise than the actual population numbers used. The accuracy of the method was not affected since what determines the probability of clusters to be selected is their *relative* size, not their actual size, and the difference between the population of children under 5 and children under 6 is likely to be the same in all the gozars.

5. Selection of subjects for the mortality survey

The crude mortality rate for children from 0 to 59 months of age and for the whole population was assessed. For the selection of the families, the same methodology as that for the anthropometric survey was followed (31 families in 30 clusters); but if a selected family did not have any child eligible for the anthropometric survey, it was nevertheless included in the mortality survey. The families were asked how many people belonged to their family, how many children under 5 belonged to the family, and whether any person had died during the 30 days preceding the survey. The cause of death was specified for children only.

6. Team composition and preparation

Four teams of 4 women, consisting of one expatriate, and 3 nurses from the Herat hospital, surveyed the 30 clusters over a period of 8 days. The surveyors followed a 3 day training the week preceding the survey. The population and authorities (MoPH, Ministry of Planning, Ministry of Foreign Affairs, Municipality, Wakils of selected gozars, and Ministry for the Promotion of Virtue and Prevention of Vice) were informed of the survey prior to the field work.

7. Information collected

7.1 Children under five

◊ **Age** (in months): the age in months was determined as accurately as possible with the help of a local events calendar and age related documents.

◊ **Weight** (in Kg): recorded to the nearest 100 grams. Small children were weighed in their mother's arms with an UNICEF electronic scale *(Seca alpha)* which was tared at the mother's weight. Children who could walk were weighed alone, standing on the scale.

◊ **Height** (in cm): children aged above 85 cm were measured standing up, while children less than 85 cm were measured lying down, to the nearest mm.

◊ **MUAC** or **Mid Upper Arm Circumference** (in mm): measured to the nearest mm, using a MUAC tape. The measures were always taken on the relaxed left arm, at the mid point between the shoulder and the elbow.

◊ **Oedema**: Absence or presence of bilateral oedema.

◊ **Measles vaccination:** The mother was asked if the child had received the measles vaccination. Three data entries were recorded: yes, proven by a vaccination card; no; or yes, but without proof by the vaccination card.

7.2 Women

◊ **Age** (in years): the age was difficult to determine accurately. It was estimated using the mothers statements and her physical aspect.

◊ **Weight** (in Kg): recorded to the nearest 100 grams with an electronic scale: *Seca alpha*. One kg was removed for clothes, since cultural practices made it difficult for a woman to undress.

◊ **Height** (in cm): they were measured standing up.

◊ **MUAC or Mid Upper Arm Circumference (in mm)**: measured to the nearest mm, using a MUAC tape. If the MUAC exceeded 300 mm, the circumference of the arm was measured with a normal measuring tape.

◊ **Number of pregnancies:** the mother was asked how many times she had been pregnant.

◊ **Prenatal and postnatal care**: the mother was asked if she had visited an MCH clinic or consulted a doctor during her last pregnancy and within 10 days after this delivery.

◊ **Delivery:** the mother was asked where she had delivered her last child (at home, in hospital, in private clinic or other); and by whom had the delivery been attended (qualified person, a dahia -Afghan Traditional Birth Attendant-, an unqualified person or alone).

◊ **Returnee:** the mothers or another adult from the family were asked if they were a returnee from Iran since April.

◊ **Tetanus vaccination:** the mother was asked if she had been vaccinated against tetanus, and if so, how many doses she had received. The data were recorded separately, according to whether the mother's statement was certified by a vaccination card or not.

Note: Pregnant or disabled mothers, or mothers above 45 years, were asked the questions regarding pregnancies and delivery even if their anthropometric measurements were not taken. The origin of the family was asked to another adult in the family if the mother was absent.

See annexe 4 for data collection forms.

7.3 Feeding practices of children 6-12 months

Information on feeding practices was collected on children selected for the anthropometric survey who were between 6 and 12 months of age.

◊ **Initiation of breastfeeding:** how many days following delivery did the mother start breastfeeding her child (day of delivery = day 1)

◊ **Method of feeding:** is the child exclusively breastfed, semi-weaned (breastmilk + other foods), or completely weaned (no more breastmilk is given).

◊ **Age at the introduction of new foods:** how old was the child (in months) when the mother introduced new foods in the child's diet, besides breastmilk

◊ **Type of food:** what are the three main types of food given

◊ **Bottle use:** did the mother use the bottle to feed the child (including for water and tea)

8. Food price survey

The prices of main food and non-food items were collected in the main markets of Herat, close to the Gozars included in the nutritional survey. The surveyed items were the same ones collected in previous ACF surveys.
5 markets were surveyed, and 2 to 3 shops were visited to obtain different price quotations for each item. An average of the item prices was then obtained over all the markets. (see annexe 1)

9. Definition of the nutritional status of children under 5

9.1 Weight-for-height index

The prevalence of acute malnutrition (or wasting) was determined using the weight for height index, as an indicator of current nutritional status. A child's nutritional status is estimated by comparing it to the weight-for-height curve of a reference population (NCHS data[6]). This curve has a normal shape and is characterised by the median weight (value separating the population into two groups of the same size) and its standard deviation (SD). The weight-for-height index (W/H) of a child from the studied population can be expressed either as a percentage of the median or as a Z-Score.

- The expression of the weight-for-height index as a percentage of the median measures the difference between the observed weight value (OW) and the median weight (MW) of the reference population, for children of the same height :

WHM = (OW / MW) * 100

- The expression of the weight for height index as a Z-Score (WHZ) compares the observed weight (OW) of the surveyed child to the mean weight (MW) of the reference population (NCHS data), for a child of the same height. The Z-score represents the number of standard deviations (SD) separating the observed weight from the mean weight:

WHZ = (OW - MW) / SD

  The use of Z-scores is recommended by the WHO as it is considered to be more reliable in terms of statistical theory.

- Definition of acute malnutrition according to weight for height index (W/H), expressed as a Z-Score or as a percentage of the median:

Table 2: *Definition of acute malnutrition*

	Z-Score	**% of the median**
Severe	W/H < -3 SD and/or bilateral oedema	W/H < 70 % and/or bilateral oedema
Moderate	-3 SD ≤ W/H < -2 SD	70 % ≤ W/H < 80 %
Not wasted	W/H ≥ -2 SD	W/H ≥ 80 %

The criteria used for the global acute malnutrition was WHZ <-2SD and/or presence of bilateral oedema, and for severe acute malnutrition WHZ<-3SD and/or presence of bilateral oedema.

9.2 Bilateral oedema

Bilateral oedema is a sign of kwashiorkor, one of the major clinical forms of severe acute malnutrition. When associated with marasmus (severe wasting), it is called marasmic kwashiorkor. Children with bilateral oedema are automatically categorised as severely malnourished, regardless of their weight-for-height percentage. Bilateral oedema is diagnosed by pressing one's thumbs on both feet for three seconds. If a shallow print remains after the thumbs are removed, oedema is positive.

[6]National Centre for Health Statistics (1977): NCHS growth curves for children birth - 18 years, United States. *Vital Health Statistics*. 165, 11- 74.

9.3 Height-for-Age index (H/A)

The height for age index indicates if a child of a given age is stunted. This index reflects the nutritional history of a child rather than his current nutritional status. This is mainly used to identify chronic malnutrition. The same principles are used as for weight-for-height, except that a child's chronic nutritional status is estimated by comparing its height with NCHS reference height-for-age curves, as opposed to weight-for-height curves. The height for age index of a child from the studied population is expressed either as a Z-Score (HAZ) or % of the median. The following HAZ cut-off points are used.

***Table 3**: Definition of stunting according to their height for age index (H/A) expressed as a Z-Score*

	Z-Score
Severe	H/A < -3 SD
Moderate	-3 SD ≤ H/A < -2 SD
Not stunted	H/A ≥ -2 SD

9.4 Mid Upper Arm Circumference (MUAC)

The mid upper arm circumference changes only marginally between 12 and 59 months (75 to 110 cm height group) and does not need to be related to any other anthropometric measurement. It is a reliable indicator of the muscular status of the child and is mainly used to identify children with a high risk of mortality. A low MUAC has been correlated to an increased risk of mortality. The MUAC is not a direct equivalent of the Weight-for-height index, which means a child can have a W/H Z-score below –2SD, and have a MUAC above 120mm.

It is not used to determine the mortality risk of children under 1 year, since below this age, a low MUAC can simply be due to the small body size. The MUAC is therefore used only among children above 75cm (which corresponds approximately to 1 year) and below 110 cm (approximately 5 years).

The cut-off values can vary according to agencies. The following figures were used for this survey:

***Table 4:** Mid Upper Arm Circumference cut-off*

	MUAC < 110 mm	110 mm ≤ **MUAC** < 120 mm	**MUAC** ≥ 120 mm
RISK	High	Moderate	Low

10. Definition of adult nutritional status

The Body Mass Index (BMI) was used to define Chronic Energy Deficiency (CED) for adults.
The formula to calculate the Body Mass Index is:

$$\textbf{BMI = Weight / (Height)}^2, \qquad \text{(expressed in kg/m}^2\text{)}$$

CED is defined as a steady state at which a person is in energy balance, although at risk in terms of health. The CED is divided in three grades I, II, III, respectively mild CED, moderate CED and severe CED.

The different levels of BMI are defined as follows:

CED *Grade III*	BMI < 16.0	kg/m^2
CED *Grade II*	16.0 ≤ BMI < 17.0	kg/m^2
CED *Grade I*	17.0 ≤ BMI < 18.5	kg/m^2
Normal nutritional status	18.5 ≤ BMI < 25.0	kg/m^2
Obesity Grade I	25.0 ≤ BMI < 30.0	kg/m^2
Obesity Grade II	30.0 ≤ BMI < 40.0	kg/m^2

Combined with BMI, the Mid Upper Arm Circumference can give additional information regarding nutritional status of adults. The usual cut-off point is 22.0 cm

Note: adult malnutrition is not well understood, with the current level of nutrition knowledge. The BMI was initially developed to study obesity, and is an imperfect tool to study adult under-nutrition. MUAC is usually used for pregnant women (for whom weight is affected by the pregnancy), and is also not enough to determine accurately adult nutritional status. ACF is presently conducting studies among under-nourished adults in Congo and Burundi to develop more appropriate indicators of adult nutritional status.

11. Mortality rate

The assessment of a mortality rate is a good indicator of the health situation in the surveyed place. It is calculated through the Crude Mortality Rate (CMR) which, when reported to a population of 10 000 persons per day, is called the Mortality Rate (MR) for the considered period (30 days preceding the survey).

The crude mortality rate is calculated as follows:

n = Total number of persons reported dead in the selected families.
N = Total number of persons alive in these same families.

CMR = n / [(n+N+N) / 2]

Mortality rate = CMR * 10 000 / 30 days

The cut-off values[7] for the mortality rate among 0 to 59 months old children are:

◊ A mortality rate of 2 deaths over 10 000 per day is the threshold defining an alarming situation.
◊ A mortality rate of 4 deaths over 10 000 per day is the threshold defining an emergency situation.

The cut-off values[8] for the mortality rate among crude population are :

◊ A mortality rate of 1 death over 10 000 per day is the threshold defining an alarming situation.
◊ A mortality rate of 2 deaths over 10 000 per day is the threshold defining an emergency situation.

12. Data analysis

The anthropometric data were analysed using Epi Info, version 5, and Epinut software.
The food basket, mortality and vaccination data were analysed using Microsoft Excel for Windows.

[7] Health and nutrition information systems among refugees and displaced persons, Workshop report on refugees' nutrition, ACC / SCN, Nov. 95.
[8] Health and nutrition information systems among refugees and displaced persons, Workshop report on refugees' nutrition, ACC / SCN, Nov. 95.

RESULTS

Note on the methodology: the methodology used was not designed to make statistical tests of associations between variables, because it is likely that the sample size is too low to draw reliable conclusions concerning the significance or non-significance of test results. Some tests of associations were carried out (see below) but their results must be interpreted with prudence.

1. Nutritional status of children between 6 and 59 months

1.1 Description of the sample population

Table 5: Age and sex distribution

Age group *(months)*	Boys		Girls		Total		Sex ratio
	N	%	N	%	N	%	
06-17	110	50.0	110	50.0	220	23.8	1.00
18-29	134	58	97	42.0	231	24.9	1.38
30-41	103	50.5	101	49.5	204	22.0	1.02
42-53	97	51.1	93	48.9	190	20.5	1.04
54-59	42	51.9	39	48.1	81	8.7	1.08
Total	**486**	**52.5**	**440**	**47.5**	**926**	**100**	**1.10**

The sex ratio in the sample is 1.10 (males to females), which shows the sample is a reasonably good representation of the sex distribution of the actual population. The age distribution is not so reliable, however, since the age was determined according to the mothers' statements and their accuracy is questionable.

1.2 Acute malnutrition

The global acute malnutrition rate, expressed in Z-scores, was 7.3% (*95% confidence interval: 5.2% - 10.3%*), and it included 0.5% *(95% CI: 0.1% - 1.9%)* of severe malnutrition. Expressed as a percentage of the median, the global acute malnutrition rate was 5.0% *(C.I.: 3.2% - 7.5%)* and the severe malnutrition rate was 0.5% *(C.I.: 0.1% - 1.9%)*.
63 children were found to be moderately malnourished, and 5 were severely malnourished, when using Z-scores; while 42 were moderately malnourished and 5 were severely malnourished when using percentage of the median.
No children were found presenting bilateral oedema.

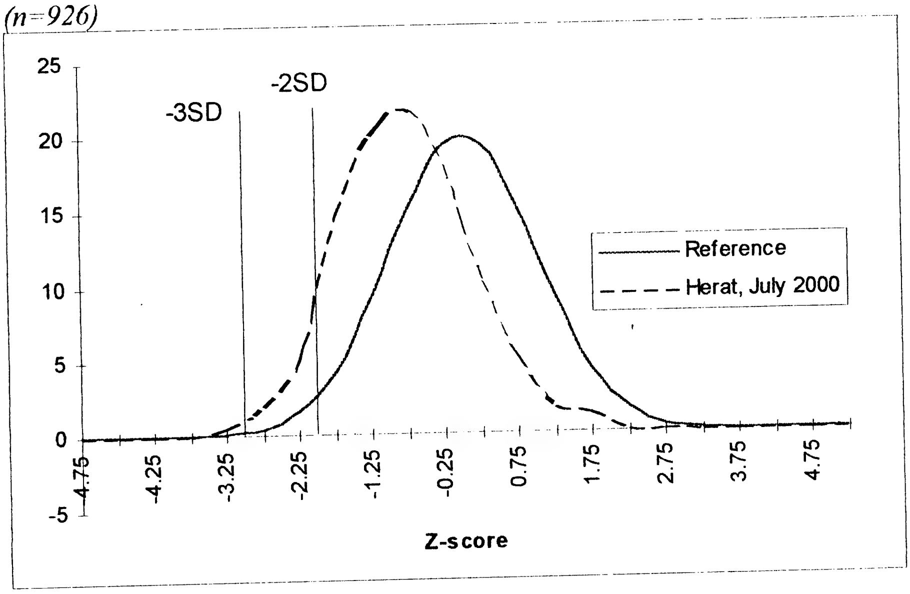
***Table 6**: Prevalence of acute malnutrition, in Z-scores and % of the median, Herat, July 2000 (n = 926)*

	Severe	Moderate	Global
Z-score	0.5%	6.8%	7.3%
95% CI	*(0.1% - 1.9%)*		*(5.2% - 10.3%)*
% of the median	0.5%	4.5%	5.0%
95% CI	*(0.1% - 1.9%)*		*(3.2% - 7.5%)*

1.2.a Weight-for-Height distribution (Z-scores)

The distribution of weight-for-heights in the sample is shifted to the left of the reference curve (see figure 1), which indicates that there is malnutrition among children 6-59 months in Herat City. There is a considerable area under the Herat curve, which is below -2 standard deviations, and corresponds to the malnutrition cases found in our survey. The Herat curve below -2SD is above the reference curve, which shows that the number of malnutrition cases is much higher in Herat City than in the reference population.

Figure 1: Distribution of the weight-for-height index in Z-scores, children 6-59 months, Herat, July 2000 (n=926)



1.2.b Acute malnutrition vs. age group

Table 7: Prevalence of acute malnutrition by age group (by Weight-for-height Z-scores), Herat, July 2000

Age group *(months)*	**Total** N	**WHZ <-3SD** N	%	**-3SD≤WHZ<-2SD** N	%	**WHZ≥-2SD** N	%
06-17	220	3	1.4	27	12.3	190	86.4
18-29	231	1	0.4	25	10.8	205	88.7
30-41	204	0	0.0	6	2.9	198	97.1
42-53	190	1	0.5	3	1.6	186	97.9
54-59	81	0	0.0	3	3.7	78	96.3
Total	**926**	**5**	**0.5**	**63**	**6.8**	**858**	**92.7**

As is commonly observed, the younger age groups (6-29 months) are at a greater risk of malnutrition than the older children, since most cases of malnutrition are concentrated in these age groups. 1.4% and 12.3% of children between 6 and 17 months are respectively severely and moderately malnourished, and 0.4% and 10.8% of children 18 to 20 months are severely and moderately malnourished, as opposed to moderate malnutrition rates of around 3% (severe: 0-0.5%) in the older age groups.

A statistical comparison between children 6 to 29 months and children over 29 months showed that the higher risk of malnutrition observed in the younger age group is statistically highly significant (χ^2= 3.42, p=3x10^{-8}). The risk of being severely or moderately malnourished was 4.46 times greater among children 6-29months than children 30-59 months (95%CI for relative risk: 2.47-8.04). (see table 8).

Table 8: Acute malnutrition rate (in Z-scores) for children 6-29 months (n=451), Herat, July 2000

	Severe	**Moderate**	**Global**
Z-score *95% CI*	0.9% *(0.1% - 3.5%)*	11.3%	12.2% *(8.3% - 17.5%)*
% of the median *95% CI*	0.9% *(0.1% - 3.5%)*	7.3%	8.2% *(5.0% - 12.9%)*

1.2.c Acute malnutrition vs. sex

The acute malnutrition rates (expressed in Z-scores) were not significantly different between boys and girls (χ^2= 0.34, p=0.56). This means there is no association between sex and the probability to be malnourished.

Table 9: Prevalence of acute malnutrition (Z-scores) by sex, Herat, July 2000.

Sex	WHZ <-2SD		WHZ ≥2SD		TOTAL
	N	%	N	%	N
Female	30	6.8	410	93.2	440
Male	38	7.8	448	92.2	486
Total	**68**	**7.3**	**857**	**92.7**	**926**

1.3 <u>Chronic Malnutrition</u>

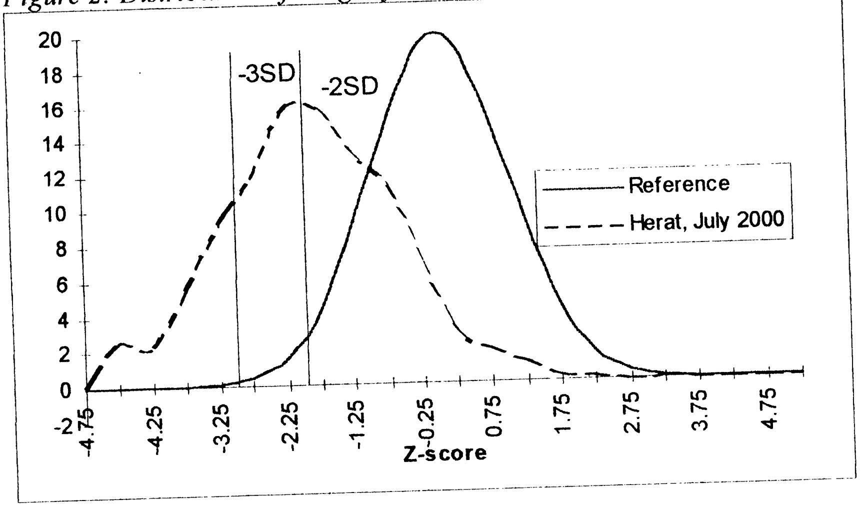
1.3.a Prevalence and distribution of stunting

Table 10: Prevalence of chronic malnutrition (height-for-age in Z-scores) among children 6-59 months, Herat, July 2000.

	HAZ < -3SD *Severe stunting*	**HAZ < -2SD** *stunting*
Z-score *95% confidence interval*	19.3% *(16.9-22.1%)*	46.7% *(42.1-51.3%)*

The prevalence of stunting is very high, with nearly half of the 6-59 months population having a height-for-age below -2SD (46.7%), and 19.3% below -3SD. The precision of these results is poor, however, since the children's age was based on the mothers' statements. Misreporting of age also probably accounts for the irregular shape of the height-for-age distribution curve (Figure 2). The precision of the results is poor, but it is nevertheless very likely that there actually is a very high rate of chronic malnutrition among children 6-59 months in Herat.

Figure 2: Distribution of Height-for-age (Z-scores) among children 6-59 months, Herat, July 2000



1.3.b Stunting vs. wasting

The sample of malnourished children is too small for statistical tests of association (χ^2) to be valid. It is nevertheless very likely that children who are stunted are more likely to become wasted than children with a normal height-for-age. Indeed, 3 of the 5 severely wasted children (60%) were also severely stunted, and 31.7% of moderately wasted children were severely stunted, whilst only 18.2% of children with a normal were W/H were severely stunted. (see table 11).
This would mean that chronic malnutrition makes children more vulnerable to acute malnutrition, a situation which is very common in most populations.

Table 11: Association between stunting and wasting (Z-scores) among children 6-59 months, Herat, July 2000

	HAZ < -3SD *Severe stunting*	-3SD≤HAZ<-2SD *Moderate stunting*	HAZ ≥ -2SD *Normal height*	TOTAL
WHZ <-3SD Severe wasting	3 *(60%)*	0	2 *(40%)*	**5** *(0.5%)*
-3SD≤WHZ<-2SD Moderate wasting	20 *(31.7%)*	11 *(17.5%)*	32 *(50.8%)*	**63** *(6.8%)*
WHZ≥-2SD Normal weight	156 *(18.2%)*	242 *(28.2%)*	460 *(53.6%)*	**858** *(92.7%)*
TOTAL	**179** *(19.3%)*	**253** *(27.3%)*	**494** *(53.3%)*	**926**

1.4 Mid-upper arm circumference

The average value for mid-upper arm circumference (MUAC) in the sample was 142.31mm (± 14.44). MUAC values ranged from 88mm to 190mm.

1.4.a MUAC vs. height

Table 12 shows the MUAC distribution versus height among children 75 to 110 cm tall (see methodology, paragraph 9.4) . The height cut-offs points used correspond to the average heights for children of 1 year (75cm), 3 years (90cm) and 5 years (110cm).

Table 12: MUAC (mm) vs. height (cm), children 75-110 cm, Herat, July 2000

Height (in cm)	MUAC < 110		110 ≤ MUAC < 120		MUAC ≥120		TOTAL
	N	%	N	%	N	%	
75≤height<90	2	0.5	2	0.5	421	99.1	**425**
90≤height<110	0	0	0	0	260	100	**260**
TOTAL	**2**	**0.3**	**2**	**0.3**	**681**	**99.4**	**685**

Only 4 children had a high or moderate risk of mortality, according to their mid-upper arm circumference, out of 685 children who were taller than 75cm (0.6%). 2 had a high risk, and 2 a moderate risk of mortality. It must be noted that this group of children excludes many of the malnutrition cases found (it includes only 36 of the 68 children who have a W/H below –2SD; see table 13), since younger children (thereby under 75 cm) are particularly vulnerable to malnutrition.

1.4.b MUAC vs. acute malnutrition

Table 13: MUAC (mm) vs. weight-for-height (Z-scores), children 75-110cm, Herat, July 2000

WHZ	MUAC < 120mm		MUAC ≥ 120mm		TOTAL
	N	%	N	%	
WHZ < -3SD	1	50.0	1	50.0	2
-3SD ≤ WHZ < -2SD	3	8.8	31	91.2	34
WHZ ≥ -2SD	0	0.0	649	100.0	649
TOTAL	**4**	**0.6**	**681**	**99.4**	**685**

Table 13 presents the relationship between MUAC and weight-for-height expressed in Z-scores, among children between 75 and 110 cm. The small sample of malnourished children makes it impossible to conduct valid statistical tests. It nevertheless seems that children who are wasted are more likely to have a MUAC under 120mm than children who are not wasted, since all 4 children who had a high or moderate mortality risk (MUAC under 12cm) were either severely or moderately wasted.

2. Mothers' nutritional status

2.1 Anthropometric characteristics

The survey was conducted in 926 families. In 26 families, the mother was absent or had died. Among the 900 present mothers, 176 were pregnant, disabled or above 45 years of age. This means 724 mothers were included in the anthropometric analysis, but questions concerning pregnancies and peri-natal care were asked to 900 mothers.

Table 14: Anthropometric characteristics of non-pregnant mothers (n=724), Herat, July 2000

	Mean	Min.	Max.	Standard deviation
Mother's age*	27.6	15	45	6.63
Weight (kg)	51.4	30.0	108.4	11.12
Height (cm)	154.5	137.0	173.3	5.32
BMI (kg/m²)	21.3	14.3	46.1	4.39
MUAC (cm)	24.9	17.0	44.6	3.71

* *Note: the mothers' age is determined according to mothers statements; many mothers do not know their age, and it is very common for Afghan women to underestimate their actual age.*

2.2 Chronic Energy Deficiency

2.2.a Distribution of mothers' BMI

Table 15: Distribution of mothers' BMI (n=724), Herat, July 2000

BMI group		n	Percentage
CED III	< 16.0	35	4.8
CED II	16.0-16.9	38	5.2
CED I	17.0-18.4	103	14.2
Normal	18.5-24.9	421	58.1
Obesity I	25.0-29.9	92	12.7
Obesity II	30.0-39.9	35	4.8
Total		**724**	**100**

The distribution of mothers' BMI by BMI category (see table 15) shows that 24.2% of mothers have a BMI below 18.5 kg/m^2, which suggests these mothers are suffering from chronic energy deficiency. The majority (58.1%) have a BMI within the normal range, while 17.5% can be considered as overweight.

2.2.b. Chronic Energy Deficiency and MUAC

The MUAC measurements show a higher prevalence of maternal malnutrition, with 17.9% of mothers having a MUAC below 220 mm (table 16).

Table 16: Prevalence of maternal undernutrition according to MUAC, Herat, July 2000

MUAC (mm)	N	Percentage
MUAC < 220 – undernourished	129	17.9
MUAC ≥ 220 – normal	593	82.1
Total	**722**	**100**

The association between mothers' MUAC and BMI is significant (χ^2=254.86, p=0). 58.0% of mothers having a BMI under 18.5 kg/m^2 also had a MUAC below 220mm, while only 4.9% of mothers with a BMI above 18.5 had a low MUAC.

3. Vaccination

3.1 Measles vaccination

Table 17:Measles vaccination coverage (n=865), Herat, July 2000

	N	%
Vaccinated, proven by card	310	35.8
Not vaccinated	249	28.8
Vaccinated, not proven by card	306	35.4
Total	**865**	**100**

Among the 865 children who were above 9 months (age at which the measles vaccination should be done), 35.8% were vaccinated as proven by a card; 28.8% were not vaccinated, and 35.4% were said to be vaccinated but the mother had "lost the card", or had discarded it claiming the vaccinations had all been done (see table 17). The large percentage in the last category makes it difficult to make any conclusions regarding the actual measles vaccination coverage, given the poor reliability of mothers' statements.

3.2 Tetanus vaccination

26.2% of mothers had not been vaccinated for tetanus. 32.1% had had at least 1 dose, and could prove it with their card, while 39.1% claimed they had had at least 1 dose, but had no card. The percentage of mothers having had 1, 2, 3, 4 or 5 doses for mothers with and without a card is displayed in table 18. The majority of mothers who had a card had done 2 or 3 doses, while 36.7% of mothers without a card had completed their tetanus vaccination (many mothers claimed to have thrown the card away after they had completed the vaccinations).

***Table 18**: Percentage of mothers having had 1, 2, 3, 4, or 5 doses of the tetanus vaccination, with and without card, Herat, July 2000 (n=900)*

	Dose 1	Dose 2	Dose 3	Dose 4	Dose 5	Total
Certified by a vaccination card	9.6%	28%	30%	13%	19.5%	100% (n=289) ***32.1% of all mothers***
No vaccination card	11.8%	18.5%	26.1%	7%	36.7%	100% (n=352) ***39.1% of all mothers***

4. Pregnancy and delivery

Data concerning mothers' pregnancies and last delivery were asked to all present mothers. This sample included 900 mothers.

4.1 Number of pregnancies

The mean number of pregnancies was 5.17 (± 3.02). The lowest value was 1 and the highest was 17.

4.2 Prenatal care

Of the 900 mothers, 567 (63%) had been to an MCH or consulted a doctor during the pregnancy, while 333 (37%) had not.

4.3 Place of delivery and birth attendance

Most of the mothers delivered at home (715 mothers, 79.4%). 179 mothers (19.9%) delivered in a hospital, and 6 (0.7%) in a private clinic.
Of the 715 mothers who delivered at home, 170 (23.8%) were attended by a qualified nurse or doctor, 521 (72.9%) by a 'dahia' (traditional birth attendant), 19 (2.7%) by an unqualified person (such as mother in law or sister), and 5 (0.7%) were alone.

4.4 Postnatal care

Most of the mothers (608 or 67.6%) did *not* go to the MCH clinic or consult a doctor within 10 days after delivery. Only 292 mothers (32.4%) consulted a qualified nurse or doctor. It should be noted that there is a tradition preventing mothers and the newborn child to leave the home until 40 days after delivery. Many mothers claimed to have consulted after 40 days.

5. Feeding practices

Information on feeding practices was collected for selected children between the ages of 6 and 12 months. The sample size for these issues was therefore 113. The sample of malnourished children in this age group was too small to make valid statistical analyses to check whether there were any statistically significant associations between the risk of being wasted and the method of feeding (exclusive breastfeeding, or weaned), the age at the introduction of new foods, bottle feeding, and the day of breastfeeding initiation.

5.1 Method of feeding

Table 19: Method of feeding, children 6-12 months (n=113), Herat, July 2000

Method of feeding	Number	Percentage
Exclusive breastfeeding	8	7.1
Semi-weaned (breastmilk + other foods)	92	81.4
Completely weaned (no breastmilk)	13	11.5

Although the sample size is too small to conduct valid statistical tests, it is likely that children who were completely weaned were at greater risk of acute malnutrition than children who were still breastfed. None of the children who were exclusively breastfed were either moderately or severely wasted. Of the semi-weaned children, none were severely wasted and only 7 out of 92 (7.6%) were moderately wasted. Whereas for children who had been completely weaned, 1 was severely wasted, and 4 out of 13 (36.4%) were moderately wasted.

This shows that weaning puts children at risk of malnutrition. The cessation of breastfeeding reduces the immune protection the child receives from breastmilk, whilst the introduction of new foods increases the child's exposure to infection because of food contamination (either due to improper preparation of foods, or the use of dirty utensils).

Of the mothers who had already introduced foods in their child's diet, 42.9% had done so before the child was 4 months of age. 44.8% had introduced foods between 4 and 6 months of age, and 12.5% waited until after 6 months.

Of the 102 mothers who had semi-weaned or weaned their child, 42.2% were using a bottle, and 57.8% were not using a bottle.

5.2 Initiation of breastfeeding

Table 20 gives the day following birth on which mothers initiated breastfeeding. Of the 5 children who had never been breastfed because the mother had no milk, 1 was severely wasted and 1 moderately wasted (2/5= 40% of malnourished in this group). Among the 108 children who had been breastfed, none were severely wasted and 10 (9.3%) were moderately wasted. The sample size is too small to make statistically valid conclusions, but it is very likely that children who are never breastfed are at much greater risk of acute malnutrition than breastfed children.

Table 20: Day following birth the mother initiated breastfeeding (n=111)

Day of inititation of breastfeeding	Number	Percentage
no breastmilk*	5	4.4
day of delivery (first day)	87	77
second day	11	9.7
third day	9	8.0
fourth day	1	0.9

*many mothers believe to have milk deficiency, but this is rare, and most mothers probably would have breastmilk with proper breastfeeding practices and support.

5.3 Types of food

Most mothers reported giving their child tea, biscuits, bread, rice, potatoes, and dry cow's milk. Mothers also gave soup, cerelac (a commercial cereal porridge mix), and 'everything the family eats'. Even if the child ate from the family plate, the diet would probably have been imbalanced, since the main source of energy for Herati families is cereal (80 to 90%; 70% from wheat, 10% from rice)[9]. This diet obviously lacks from vitamins and minerals (available in fresh fruits and vegetables) and diverse source of proteins (such as eggs and meat).

6. Mortality

930 families were included in the mortality survey.

6.1 Total population mortality rate

Total number of reported deaths (all ages) = 20
Total number of persons alive at the time of the survey = 6,784

CMR = $20 / [(20 + 6{,}784 + 6{,}784) / 2\,] = 2.94 \times 10^{-3}$
Mortality rate = $2.94 \times 10^{-3} \times 10{,}000 / 30 = 0.98$

The mortality rate for the entire population at the time of the survey was 0.98 deaths per 10,000 persons per day. This rate is just below the threshold corresponding to an alarming situation (1/10,000/day).

6.2 Under five's mortality rate

Number of reported deaths among under five's = 14
Number of children under five alive at the time of the survey = 1,473

CMR = $14 / [(14 + 1{,}466 + 1{,}466) / 2\,] = 9.5 \times 10^{-3}$
Mortality rate = $9.5 \times 10^{-3} \times 10{,}000 / 30 = 3.168$

The mortality rate among children under 5 is 3.168 per 10,000 children per day. This rate is above the threshold corresponding to an alarming situation (2 / 10,000 / day).

[9]WFP VAM, Herat City baseline report, April 2000.

6.3 Causes of death for children under 5

Of the 14 deaths, 5 died of diarrhoea. 2 other children have also probably died of gastrointestinal infections since 1 mother reported her child dying of stomach pain, and the other of fever and vomiting. This would mean 50% of deaths were due to gastrointestinal infections, which is consistent with the fact that these diseases are highly prevalent during the summer season.

Other deaths included: 2 from fever (unspecified cause), 2 from acute respiratory infections, 1 drowning, 1 measles case, and for one the mother did not know.

The information on causes of death is not completely reliable, however, since it relies on mothers' reports, and could not be checked with a medical diagnosis.

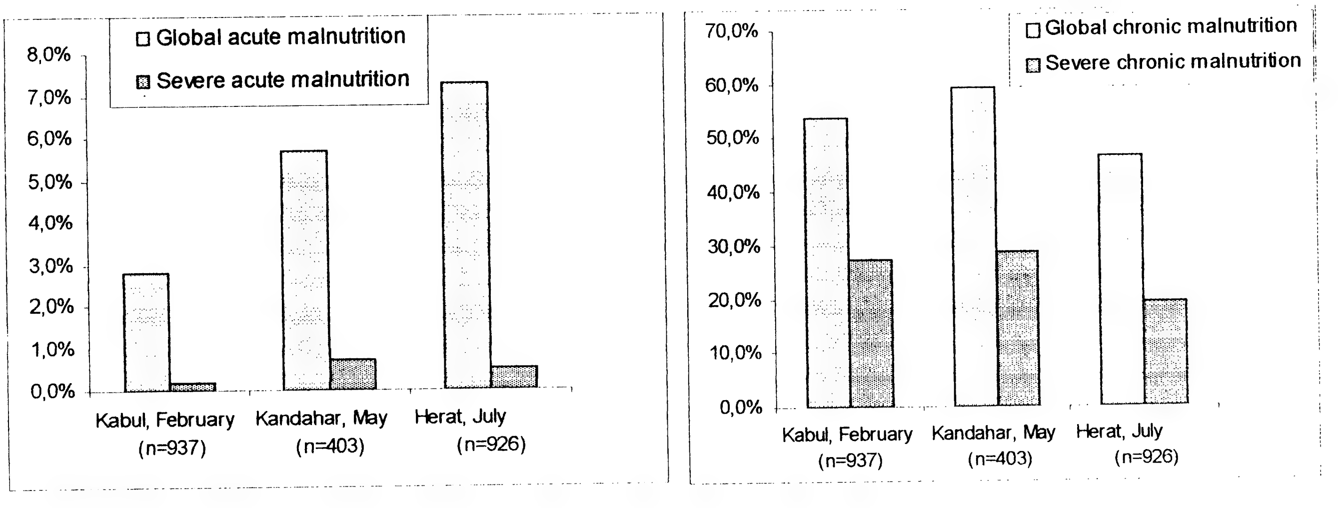
1. Acute malnutrition: comparison with other surveys

The malnutrition rate was higher in Herat, in July 2000, than the rate found in Kabul in February, and in Kandahar, in May earlier this year[10]. Table 21 shows the different acute and chronic malnutrition rates from the different nutritional assessments.

Table 21: Acute and chronic malnutrition rates (in Z-scores), by survey, Afghanistan, 2000

Survey / assessment[11]		*Acute malnutrition % (95% CI)*		*Chronic malnutrition % (95% CI)*	
		Global	*Severe*	*Global*	*Severe*
Kabul, February	(n=937)	2.8 *(1.5-4.9)*	0.2 *(0.0-1.4)*	53.7 *(49-58.2)*	27.3 *(23.3-31.6)*
Kandahar, May	(n=403)	5.7 *(3.0-10.2)*	0.7 *(0.0-3.6)*	59.4 *(52.4-66.3)*	28.7 *(22.5-35.4)*
Herat, July	(n=926)	7.3 *(5.2-10.3)*	0.5 *(0.1-1.9)*	46.7 *(42.1-51.3)*	19.3 *(16.9-22.1)*

Figure 3: Comparison of acute and chronic malnutrition rates by city, Afghanistan, 2000



These findings are surprising, since Herat is known to be one of the wealthiest cities in Afghanistan, with one of the most secure food security situations. Its population tends to be well-educated, and therefore more likely to have more sanitary living conditions and better health and hygiene practices.

The relatively high malnutrition rate found in Herat is probably due to two factors. The first is the season in which the survey was conducted, when diarrhoea is highly prevalent. The second is that the relative wealth of Herat's population hides wide inequalities between neighbourhoods, and many families live in poor conditions.

1.1 Diarrhoea and acute malnutrition

Across Afghanistan, the prevalence of diarrhoea peaks in the summer months (July to September), and with it, the prevalence of acute malnutrition also rises. Diarrhoea is a main cause of acute malnutrition because

[10]See Action contre la Faim's: '*Nutritional and mortality survey, Kabul City, Afghanistan, February 2000*' and '*Nutritional assessment, Kandahar City, Afghanistan, May 2000*', By Charlotte Dufour.
[11]All the surveys were done using the same methodology (30 clusters of 30 children), except for Kandahar, where the results are based on a sample of 13 clusters, including 403 children.

the infection reduces both children's appetites (and therefore nutrient intakes), and absorption of nutrients (which are lost in the stools). Furthermore, children who are malnourished are at greater risk of infection, and can get caught in a vicious cycle of malnutrition and infection.

The Kabul and Kandahar assessments were conducted at times when the diarrhoea prevalence, and consequently the malnutrition rate, are low. Whereas in Herat, the survey was conducted in the season where diarrhoea prevalence surges, and children are at much greater risk of malnutrition. Several factors support the hypothesis that the high malnutrition rate in Herat is seasonal, and linked to the diarrhoea peak:

1. half of the mortality cases were reported as due to gastrointestinal infections
2. many of the mothers of malnourished children reported that their child was sick with diarrhoea
3. the rate of *chronic malnutrition* is considerably lower in Herat than in Kabul and Kandahar (see table 21), which shows that on a long-term basis, children tend to be better off nutritionally in Herat than the other cities (although the prevalence of chronic malnutrition is still alarmingly high).
4. the severe malnutrition rate is quite low relative to the global malnutrition rate, if compared, for example, to the situation in Kandahar. This may indicate that the malnutrition cases are recent, and that children have not yet become severely malnourished. It is probable that the rate of severe acute malnutrition may increase later in the summer, as the diarrhoea season persists, and decrease again in September/October, as the prevalence of diarrhoea falls.

1.2 <u>Socio-economic inequalities</u>

Herat is known as one of the wealthiest towns in Afghanistan, and the VAM reports it as being one of the most food secure. This relative wealth hides wide inequalities in living standards and health status between areas. In some clusters, the surveyors were impressed by the size and style of newly build houses. These families owned cars, had well furnished homes, and some even reported going on vacation to neighbouring countries. In these areas, few children if any were malnourished. On the other hand, some gozars consisted of old mud houses, as seen in Kandahar, with simple living conditions. Most of the malnutrition cases were found in these areas.

The methodology of this survey is designed to give an adequate estimate of malnutrition for the city as a whole, and is not appropriate to specify which areas of the city are more vulnerable, or to give malnutrition rates by area. 30 clusters are randomly selected, which means that some particularly vulnerable areas may be excluded (as well as some wealthy areas). Also, the sample size in each area is too small to draw reliable estimates of the malnutrition rate for particular gozars or districts. The surveyors' observations, and the discrepancies in the number of malnutrition cases between clusters suggest, however, that there are wide inequalities in the vulnerability of children between different areas of Herat. In particular, areas in district 2 and 7 (especially around the Baba-e-Bargh area) seemed more vulnerable than other surveyed areas.

1.3 <u>Existing feeding programmes</u>

The existing supplementary feeding programmes do not seem to be sufficient to respond to the need for the treatment of malnutrition. It may be necessary to increase the capacity of the centres (such as by increasing the number of consultations or by more efficient organisation), enhancing the efficiency of the treatment, and improving the coverage rate by regular house to house nutritional screenings in vulnerable areas, or implementing a home visiting programme to refer and follow-up malnutrition cases.

The opening of a therapeutic feeding centre by MSF is a positive step to improve the treatment of severe malnutrition. It will necessitate a good screening and referral system, as well as good follow-up of cured children (through the SFCs), to ensure that it has a good coverage of severe cases, and to prevent children from relapsing.

2. Chronic malnutrition

The rate of chronic malnutrition in Herat is significantly lower (P=0.0014) than the chronic malnutrition rate found in Kabul in February, and even lower compared to that found in Kandahar. This suggests that children are less vulnerable to chronic malnutrition in Herat than in Kabul and Kandahar.

Chronic malnutrition is related to the quality of children's diet (enough vitamins, minerals, and good quality protein), and their exposure to disease. Children who lack micronutrients, and who are repeatedly exposed to infections (such as diarrhoea during the summer), fail to grow well, and become stunted. Chronic malnutrition is therefore linked to feeding practices, as well as hygiene, sanitation, and use of primary health care (vaccinations, regular MCH consultations...).

The finding that chronic malnutrition is lower in Herat than in other surveyed cities is thereby consistent with the fact that Heratis tend to be more food secure, better educated, have better hygiene practices, and that the city's water and sanitation conditions seem better than in other cities. Also, the vaccination rates, and number of peri-natal consultations were higher in Herat than Kabul or Kandahar, suggesting that there is a greater use of primary health care facilities (see below).

The chronic malnutrition rate is still extremely high, however. Although being small may not seem a problem in itself, chronic malnutrition makes children much more vulnerable to diseases (the lack of micronutrients lowers their immunity and resistance), and to acute malnutrition. This means the nutritional status of children, in terms of weight-for-height (wasting), can deteriorate very quickly, if the children's living conditions deteriorate (reduced food intakes, higher exposure to infections, reduced quality of drinking water, etc.), as is the case during a drought, for example. The prevention of chronic malnutrition must therefore be, as in other cities, a priority in health programmes.

3. Mothers' nutritional status

The rate of Chronic Energy Deficiency (CED) among mothers in Herat is considerably higher than those found in Kandahar and Kabul. 10% of mothers in Herat had a BMI under 17, compared to only 6.6% in Kandahar and 4.3% in Kabul. (see table 22)

On the other hand, the percentage of mothers with a MUAC under 22 cm was slightly lower in Herat (17.9%) than in Kabul (18.7%). Also, the mean BMIs, weights, and MUACs and their standard deviations were similar in Kabul and Herat. The reasons for these findings are not clear. In fact, adult malnutrition and indicators of adult nutritional status are not yet fully understood, and it is not easy, given the current level of knowledge, to interpret results on adult malnutrition. (See note on indicators of adult nutritional status, in methodology, paragraph 10)

Table22: Distribution of mothers' BMI (in %), by city, Afghanistan, 2000

BMI group		**Kabul, Feb**	**Kandahar**	**Herat**
		n=668	*n=300*	*n=724*
CED III	< 16.0	1.0	2.3	4.8
CED II	16.0-16.9	3.3	4.3	5.2
CED I	17.0-18.4	10.5	10	14.2
Normal	18.5-24.9	68.1	50.7	58.1
Obesity I	25.0-29.9	13.9	21.3	12.7
Obesity II	> 30.0	3.1	11.3	4.8

4.1 Vaccination coverage

The measles vaccination is very important for the prevention of malnutrition since measles is strongly associated with malnutrition. (Measles makes children more vulnerable to malnutrition and vice versa).

The vaccination coverage was higher in Herat than in Kabul and Kandahar (see table 23). Although the total vaccination coverage is similar between Herat and Kabul (71.2% of children 9-59 months were reported as being vaccinated in Herat and 71.3% in Kabul), the percentage of children who had a card to prove it was higher in Herat (35.8%) than Kabul (22.5%). This makes the coverage rate more reliable for Herat than Kabul, and suggest more kids were actually vaccinated in Herat. The lowest vaccination coverage, by far, was in Kandahar.

Table 23: Measles vaccination coverage by city (n = number of children 9-59 months), Afghanistan 2000

	Kabul, Feb. *n=906*	Kandahar *n=380*	Herat *n=865*
Vaccinated, proven by card	22.5 %	5 %	35.8 %
Not vaccinated	28.7 %	57.6 %	28.8 %
Vaccinated, not proven by card	48.8 %	37.4 %	35.4 %

As for measles, the vaccination coverage for tetanus, among mothers, was better in Herat than Kabul and Kandahar (see table 24). The proportion of mothers with cards was higher than the other cities, and the mothers who had completed their vaccination (5 doses) was also considerably higher.

Table 24: Tetanus vaccination coverage among mothers, by city (n = present mothers), Afghanistan 2000

	Kabul *n=861*	Kandahar *n=385*	Herat *n=900*
At least one dose, with card	29.5 %	4.7 %	32.1 %
At least one dose, without card	44.3 %	32.7 %	39.1 %
Completed vaccination, with card	1.7 %	0 %	6.2 %
Completed vaccination, without card	6.7 %	1.8 %	14.3 %

Although the vaccination coverage for tetanus and measles, and the percentage of mothers who had vaccination cards for their child and themselves, was higher in Herat than Kabul and Kandahar, there is still much room for improvement in the coverage rate for immunisation.

4.2 Pregnancies and delivery

The number of pregnancies was similar in Herat (5.17 $\pm$ 3.02) than in Kabul (4.83 $\pm$ 2.66) and lower than in Kandahar (6.25 $\pm$ 3.52).

More mothers consulted a doctor or visited an MCH during their last pregnancy in Herat, than in Kabul or Kandahar. The rate of post-natal consultations (within 10 days of delivery) was higher in Herat than in Kandahar, but it was slightly lower than in Kabul (see table 25).

Table 25: Prevalence of mothers attending peri-natal consultations, by city, Afghanistan, 2000

	Kabul *n= 854*	Kandahar *n=390*	Herat *n=900*
Pre-natal consultation	40.8 %	34.5 %	63.0 %
Post-natal consultation (<10 days)	30.3 %	23.0 %	27.3 %

More mothers delivered their last child at home in Herat than in Kabul, where many mothers delivered in hospital or private clinics. This probably reflects the higher availability of hospitals and private clinics in the

capital. Compared, to Kandahar, however, more mothers in Herat delivered in hospitals and less at home. (see table 26)

Table 26: Place of delivery, by city, Afghanistan, 2000

	Kabul *n=854*	Kandahar *n=390*	Herat *n=900*
Home	62.1 %	89 %	79.4 %
Hospital	29.7 %	6.9 %	19.9 %
Private clinic	8.2 %	4.1 %	0.7 %

Table 27: Birth attendance (n= mothers who delivered at home), by city, Afghanistan, 2000

	Kabul *n=529*	Kandahar *n=347*	Herat *n=715*
Doctor / nurse	18.7 %	4 %	23.8 %
Dahia (traditional birth attendant)	9.6 %	70.9 %	72.9 %
unqualified person	62 %	23.6 %	2.7 %
alone	9.6 %	1.4 %	0.7 %

More mothers were attended by a dahia or doctor / nurse in Herat than the other two cities. But much less mothers were attended by an unqualified person or were alone, compared to mothers in Kabul and Kandahar. (see table 27)

The data on vaccination and peri-natal care practices seems to reflect the higher level of education (and thereby greater health awareness) of the Herati population, compared to that in Kandahar and Kabul. In terms of the place of delivery, the availability of hospitals and private clinics (more in Kabul, less in Kandahar) also probably plays a role in determining where a mother will give birth.

Although the use of primary health care seems better in Herat than the other cities, there is still much to be done to improve availability, access and use of primary health care facilities. In particular, the number of post-natal consultations needs to be greatly increased, and if most births are attended by dahias, these should be well-trained, and able to refer complications to adequate medical services.

5. Feeding practices

5.1 Introduction of new foods

The results tend to show that children who had been completely weaned (cessation of breastfeeding), were at greater risk of being malnourished than children who were still breastfed. Breastmilk is indeed very important for the child's immune protection. The introduction of new foods in the diet is also an added source of contamination for children, especially if the food is not hygienically prepared.

It is recommended that new foods be introduced in the child's diet between 4 and 6 months of age. Before 4 months, the child should be exclusively breastfed, as other foods are unsuitable for him (source of pathogens, difficult to digest, improper nutrient composition). Beyond 6 months, breastmilk no longer provides enough nutrients to meet the child's requirements, and new foods (balanced foods, prepared in a hygienic way) should be introduced in the child's diet. Breastfeeding should be continued until at least 24 months.

In Herat, although most mothers (44.8%) introduced foods between 4 and 6 months, 42.9% of mothers in the sample introduced foods before 4 months of age, which is too early and puts the child at risk of gastrointestinal infections. Also, 42.2% of mothers who had introduced foods were using a feeding bottle, which is a serious source of contamination (the bottle is hard to keep clean and often dirty).

5.2 Milk deficiency

12 mothers had completely weaned their child, even if they were younger than 12 months. Some of these mothers claimed to have no milk, and 5 of them had had no milk since their child's birth. These children are at much greater risk of malnutrition than breastfed children.

It is common for mothers to claim that they have no milk. Milk deficiency should be, normally, very rare. Studies by Prentice and Prentice, in the Gambia, showed that mothers can always produce breastmilk unless they become very seriously malnourished. This is rarely, if ever, the case for the Afghan women who claim not to have breastmilk. Milk deficiency in Afghanistan is more likely due to cultural and feeding practices. For example, many mothers stop breastfeeding their child during an illness, or they introduce bottle feeding. Some mothers may have difficulty breastfeeding their child and may give up trying. If the child stops suckling, breastmilk production gradually ceases. The milk can be made to come back, however, with frequent suckling and appropriate counselling and advice.

It seems essential to provide mothers with health education on proper feeding practices, and advice on how to breastfeed properly. This health education could be done not only through sessions in MCH clinics, but through home visiting programmes. In particular, dahias, who attend most births, should be trained on how to help the mother initiate breastfeeding and to give her information on the necessity to keep breastfeeding until 2 years of age, even through illnesses.

5.3 Types of food

The diet of Afghan families lacks in micronutrients and good quality protein sources. These are extremely important for children to grow well, and to have a strong immune system. The use of diverse and adequately prepared foods (hygienic, use of fresh fruits and vegetables), should be promoted through health education and food demonstrations. The promotion of kitchen gardening for home production of vegetables is also highly advised.

6. Mortality

The mortality rate for all ages, at the time of the survey, was 0.98 deaths per 10,000 persons per day. This rate is just below the threshold corresponding to an alarming situation (1/10,000/day). The mortality rate among children under 5 was 3.168 per 10,000 children per day, which is above the threshold corresponding to an alarming situation (2/10,000 / day).

It is difficult to draw firm conclusions concerning the data, because the methodology is an imperfect tool. The mortality data covers only the past month (since beyond this time, the memory bias renders the data even more unreliable), which gives only a small sample of time, and may not be exactly representative of the actual situation. The numbers found, however, seem in accordance with the fact that the population is a vulnerable population, because of the country's situation and the poor socio-economic conditions of many families.

The high mortality rate among children under 5 is consistent with the fact that the survey was done when diarrhoea prevalence peaks, affecting essentially younger children. Half of the mortality cases were indeed reported to be due to gastrointestinal infections.

RECOMMENDATIONS

1. Nutrition

a) To improve the existing supplementary feeding programme, through regular screenings in vulnerable areas of the city to refer malnourished children. Also, expanding the programme by increasing the number of days with malnutrition consultations (limited to 1 or 2 days per week in each MDM clinic), or increasing the number of mothers by consultation through improved organisation, may help treat greater numbers and improve the follow-up of malnourished children. Introducing a home visiting programme to screen and follow-up malnutrition cases, and do health education could also improve the treatment and prevention of malnutrition.

b) To implement a nutrition surveillance throughout the existing MCH clinics with the systematic taking of anthropometric measurements for all children attending, so as to refer them to adequate nutrition centres (MDM for moderate malnutrition, MSF therapeutic feeding ward in the hospital for severe malnutrition).

c) To improve the quality of families' diet through the promotion of kitchen gardening, and/or health education on healthy eating and appropriate infant feeding, with food demonstrations.

2. Maternal and child care

a) To improve peri-natal care, such as through the training of traditional birth attendants (dahias), and expansion of maternal and child health services.

b) To provide support for mothers claiming to have problems breastfeeding, through special health education sessions, or support groups (such as in MCH clinics or HABITAT community fora). Dahias should also be trained on how to assist mothers with the initiation of breastfeeding, to teach them proper breastfeeding practices and assist them if they have milk deficiency.

c) To further improve the vaccination coverage, in particular measles, among children under 5, and tetanus for mothers, through vaccination campaigns and improvements in the EPI system.

d) To continue and further efforts in the prevention and treatment of diarrhoea, through health education campaigns (emphasising the need to continue regular feeding during diarrhoea episodes, the importance of breastfeeding, and prevention of dehydration with ORS), and the opening of ORT corners.

3. Food security

To do food security assessments to identify the vulnerable areas of Herat[12], determine their needs, and implement food security programmes such as cash or food-for-work, or income generation schemes in these areas.

4. Water and sanitation

To continue to improve the water and sanitation infrastructure, especially in vulnerable areas.
To associate such projects with health and hygiene education.

[12] The methodology of the survey is not appropriate to identify specific vulnerable areas, since 30 clusters were randomly selected, thereby potentially excluding some poor areas. A city-wide basic assessment should be done in all districts, such as through the community fora, for example.

ANNEXE 1

MARKET SURVEY - HERAT July 2000

DISTRICT		D5	D2, D7	D3,D4	D2, D3, D4	D3, D7	
ITEMS	**Unit of measure**	**Darwaza-e-Malik**	**Darwaza-e-Kandahar**	**Bay Morghan**	**Darwaza-e-Kushk**	**Spena Heda**	**AVERAGE**
FOOD							
BREAD (nan)	120 g	2500	2500	2500	2500	2500	**2500**
WHEAT FLOUR	7kg		105000	105000	105000		**105000**
RICE (prepared dish)	7 kg	150500	225000	245000	195000	213500	**201375**
RICE	7 kg	88667	140000	138250	155000	99667	**119292**
RED BEANS	1 kg	29000	28000	40000	50000	28000	**36143**
GRASS PEA	1 kg	22000	21000	22000	20000	20000	**20857**
PEAS	1 kg	50000	50000	55000	55000	52500	**53125**
SALT non-iodized	1 kg	2000	2000	2000	750	1500	**1625**
SALT iodized	1 kg	3500	5000	4667	4000		**4417**
SUGAR	1 kg	22500	22000	2300	22000	22000	**18800**
GHEE	1 kg	39000	36750	45000	37500	36750	**39000**
DRY FULL MILK	1 kg			250000	235000		**240000**
YOGHURT	1 kg	13000	10000	15000	15000	8000	**12200**
EGGS	1 piece	2500	2500	2500	2500	2250	**2417**
BEEF	1 kg	31000	30000	32000	27500	3000	**26000**
BEEF without bone	1 kg	50000	50000	50000		50000	**50000**
MUTTON	1 kg	42500	42500	45000	45000	42500	**43500**
CHICKEN	1 kg				90000		**90000**
POTATOES	7 kg (seir)	31833	35000	35000	35000	31500	**33350**
ONIONS	7 kg (seir)	38500	10000	49000	21000	38500	**36889**
EGGPLANTS	7 kg (seir)	17500	14000	22167	14000	14000	**17938**
TOMATOES	7 kg (seir)	31500	28000	30333	31500	21000	**29556**
BLACK TEA	1 kg	160000	115000	150000	116667	185000	**142727**
GREEN TEA	1 kg	76000	75000	63000	70000	85000	**73385**

NON FOOD							
DETERGENT POWDER	150 gr	8000	6000	7667	7000	8000	**7429**
DETERGENT SOAP	200 gr	5500	6000	8000	7667	6000	**7063**
HAND SOAP	90 gr	9000	10000	9000	8000	10000	**9167**
TOOTH PASTE	60 gr	12000	12000	12000	9000	12000	**11143**
MATCHES	piece			500	750	500	**643**
CANDLES	piece	500		850	750	500	**700**
DIESEL	liter	13500	14000	13000	16250	13000	**13950**
WOOD	7 kg (seir)	22000	22000	24500	17500	21000	**21400**

RESULTS OF THE MDM NUTRITIONAL SCREENING MINARETS I & II and CTC CAMPS

Table 1: Distribution of malnutrition cases by age group, in Minarets I and II (n=73)

	% W/H < 70%	70 to 79%	≥ 80%	Total
6-12 months			4	4
13-24 months	1	3	10	14
25-36 months		4	21	25
37-48 months		1	12	13
49-60 months			17	17
Total	1	8	64	73
Percentage	1,37%	10,96%	87,67%	100,00%

The screening was realised on the 18th of July 2000.
There were an estimated 83 to 98 children between 6 and 59 months in the camp, and 73 of them were measured.

Table 2: Distribution of malnutrition cases by age group, in the CTC camp (n=48)

	% W/H < 70%	70 to 79%	≥ 80%	Total
6-12 months		2	3	5
13-24 months		1	6	7
25-36 months		2	11	13
37-48 months		1	13	14
49-60 months			9	9
Total	0	6	42	48
Percentage	0,0%	12,5%	87,5%	100,0%

The screening was realised on the 8th of August 2000.
There were an estimated 61 to 72 children between 6 and 59 months in the camp, and 48 of them were measured.

LIST OF SELECTED CLUSTERS

Cluster Number	District number	GOZAR NAME
1	1	Familia
2	1	Doulatkhana
3	2	Sahab Zada
4	2	Charbagh Torka
5	2	Faroqi
6	2	Dabagh Ha
7	3	Jada-i-Arzaq
8	3	Masjed-i-Safaid
9	4	Khaja Koza Gar
10	4	Balian Wa Bekrabad
11	5	Bagh-e-Dasht
12	5	Baghcha-e-Mehtar
13	5	Jada-e-Behzad & Lycee Mehri
14	5	Baghch-e-Mustofi
15	5	Qolabcha
16	6	Jakan-e-Olia
17	6	Jakan-e-Sufla
18	6	Awal-e-Sarak-e-Aman Shish Noor
19	6	Qaizan-e-Choicha
20	6	Sufi Abad, Khair Abad
21	6	Now Abad
22	7	Sultan Agha
23	7	Mohmandjah
24	7	Mahli Sarbanah
25	7	Baba-e-Barq
26	7	Shal Bafan-e-Shamali
27	7	Pol-e-Bagh-e-Zabida
28	8	Za-e-Joe Anjel
29	8	Pir Darwish
30	8	Qala-e-Shater

ANTHROPOMETRIC CLUSTER FORM: Children 6-59 months

Date: Cluster Number: /__/ __/ Team Number: /__/

Range of birth dates: From:______________ To: __________ Gozar:_______________

N°	Age (Months)	Sex (M/F)	Weight (kg)	Height (cm)	Oed (Y/N)	MUAC (mm)	% W/H	Measles 1,2,3*	Returnee since Apr.
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									

* 1= Yes, with card 2= No 3= Yes, no card

ANTHROPOMETRIC CLUSTER FORM: Mothers 15-45 years

Date: Cluster Number: /__/ __/ Team Number: /__/

Gozar:

N°	Age (Y)	Weight (kg)	Height (cm)	MUAC (mm)	N° of pregnancies	Clinic/ doctor visit while pregnant?	Place of child delivery*	Was the birth attended?**	Clinic/ doctor visit after delivery?***
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									

* **1**= at home **2**=in hospital **3**= in private clinic **4**= other (specify)

** **1**= qualified nurse **2**= Dahia **3**= unqualified person **4**= Alone

*** Yes= up to 10 days after delivery; No= No or > 10 days after delivery

ANNEXE 4

MORTALITY CLUSTER FORM

Date:	Cluster Number: /__/ __/	Team Number: /__/
Gozar:		

N°	Total n° of family members*	N° of children under 5 years	Total n° of deaths since 1 month	N° of deaths <5 years since 1 month	Cause of death for children
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					

*Family = people living in the same rooms, sharing the same meal, the same cooking pot.

A child belongs to a family if it has been living with it for more than 2 months.

ANNEXE 4

TETANOS IMMUNIZATION OF MOTHERS

Date: Cluster Number: /__/ __/ Team Number: /__/

Gozar:

N°	No	Vaccination proven by card*	1	2	3	4	5	Vaccination No card*	1	2	3	4	5
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													
Total													

Tick the number box corresponding the the number of doses the mother has had

FEEDING PRACTICES: CHILDREN 6-12 MONTHS

Date: Cluster Number: /__/ _ Team Number: /__/

Gozar:

N°	N° anthropo. sheet	Start of breastfeed*	Feeding 1, 2 or 3**	Age at intro of new foods	3 Main types of food given	Bottle-fed Y/N
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

* Day following delivery started to breastfeed (day of delivery = 1)

** 1= breastfeeding only 2= breastmilk+ other foods 3= completely weaned